Clinician Decision Support Utility in Combating Obstetric Healthcare Disparities

Joshua Ogogo, CUNY School of Medicine, M.D. Candidate Class of 2023

INTRODUCTION

Racial and ethnic disparities in obstetrical care continue to be extensively reported in the United States. Women of color experience disproportionately higher rates of severe maternal morbidity and mortality.

Equity can be supported through clinical decision support systems (CDSS). Clinical informatic tool that can provide dashboards alerts, assist in medical decision making, support appropriate cultural competency, and provide patient centered care. Equality can be promoted through the widespread use of Enhanced Recovery After Surgery protocols that deliver evidence based systemic and standardized preoperative care to all patients.

FIG. 1. Trends in pregnancy related mortality in the United States, 1987-2009. *Number of pregnancy-related deaths per 100,000 live births per year; test for trend p<0.001. Date from Centers for Disease Control and Prevention
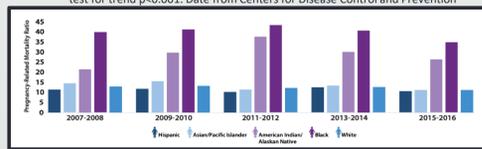

FIG. 2. Race differentials in pregnancy-related mortality in the United States, 2007-2016, * Number of pregnancy-related deaths per 100,000 lives births per year. Date from Centers for Disease Control and Prevention

HYPOTHESIS AND SPECIFIC AIMS

Aim 1: To further examine the relationship between SMM outcome and patient-level SDH utilizing institutional New York-Presbyterian Hospital/Weill Cornell Medicine data.
- **Hypothesis:** Patient-level SDH (Black race, non-English speaking, lower socioeconomic status, Medicaid or uninsured status) will be strongly associated with postpartum SMM.

Aim 2: To study the impact of physician directed CDS application reminders on clinical care delivered to minority or socioeconomically disadvantaged parturient by statistical analysis of pre- and post-CDS implementation data.
- **Hypothesis:** CDS application reminders will lead to reduction in adverse peripartum outcomes amongst patients.

Aim 3: To study the impact of physician directed personalized quality performance reports on clinical care delivered to minority or socioeconomically disadvantaged parturients.
- **Hypothesis:** Performance reports will lead to further reduction in adverse post-cesarean delivery outcomes amongst patients, including adherence to ERAS protocol, SMM measures, patient LOS, and readmissions.

BACKGROUND AND SIGNIFICANCE

In the United States, healthcare disparities continue to persist and evolve, with obstetric and obstetrical anesthesia being unimmune to it effects Data has shown that woman of color experience disproportionately higher rats of morality and sever maternal morbidity that other racial and ethnic groups.

This proposal with address these problems and will improve scientific knowledge concerning healthcare disparities through CDSS. CDSS has been shown to enhance physician performance but not with regards to the promotion of health equity.
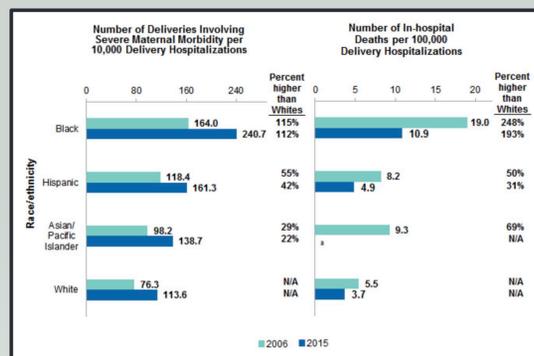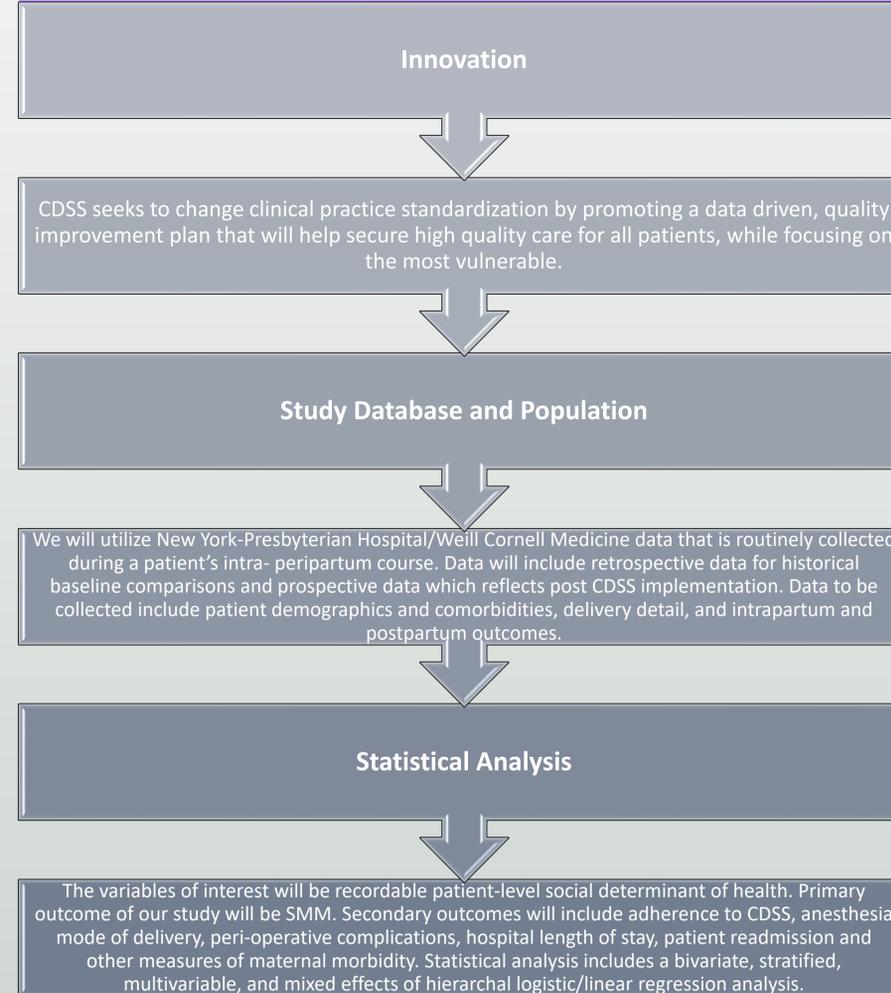

FIG. 3. Rates of severe maternal morbidity and in-hospital deaths among delivery hospitalizations, by patient race/ethnicity, 2006 and 2015. Data from Healthcare Cost and Utilization Project (HCUP) Statistical Brief

PROJECT METHODS

Innovation

CDSS seeks to change clinical practice standardization by promoting a data driven, quality improvement plan that will help secure high quality care for all patients, while focusing on the most vulnerable.

Study Database and Population

We will utilize New York-Presbyterian Hospital/Weill Cornell Medicine data that is routinely collected during a patient's intra- peripartum course. Data will include retrospective data for historical baseline comparisons and prospective data which reflects post CDSS implementation. Data to be collected include patient demographics and comorbidities, delivery detail, and intrapartum and postpartum outcomes.

Statistical Analysis

The variables of interest will be recordable patient-level social determinant of health. Primary outcome of our study will be SMM. Secondary outcomes will include adherence to CDSS, anesthesia mode of delivery, peri-operative complications, hospital length of stay, patient readmission and other measures of maternal morbidity. Statistical analysis includes a bivariate, stratified, multivariable, and mixed effects of hierarchal logistic/linear regression analysis.

POTENTIAL PROBLEMS

Data acquisition and collection (data entry, extraction, process, validation, and storage)

- New York-Presbyterian Hospital/Weill Cornell Medicine transition to new EMR and AIMS programs could limit the use of historical data for comparison and timeline development

Alternative strategies to automated data collection include:

- manual chare review
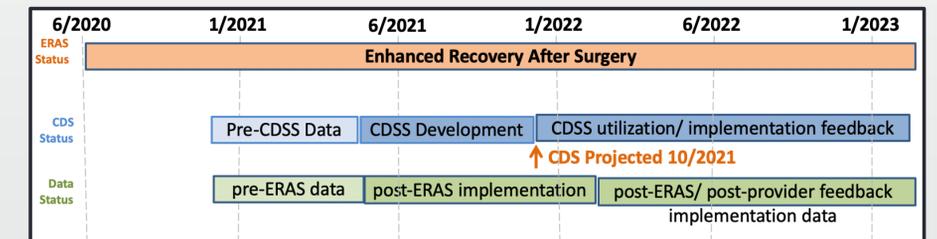- Blended or targeted automated/manual data collection

PROJECT TIMELINE

Fig. 4. Upon approval of this proposal, the first objective will be the utilization the New York-Presbyterian Hospital/Weill Cornell Medicine database to collect retrospective data prior to the development of CDSS (pre-CDSS data) for historical baseline comparisons. Subsequent to pre-CDSS data will be the development of the CDSS. Lastly, this project will entail implementation of CDSS with the simultaneous collection of prospective data which reflects post CDSS implementation.

PROJECT BUDGET

Research Grant Budget Detail	Year 1		Year 2	
	FAER Award	Other Funds	FAER Award	Other Funds
Personnel Salary and Benefits (list by name and title, indicate the % time on the project and the benefit rate for each)				
Robert White, PI (YR1: 75% dedicated research time, 90% devoted to this project; 30.5% benefit rate)	$79,368	$74,939	$82,472	$76,128
Joshua Ogogo, Primary Author (YR1: 75% dedicated research time)	$30,095		$30,945	
Silis Jiang, Biomedical Informaticist (5% effort; 30.5% benefit rate)	$9,601		$9,892	
Virginia Tangel, Biostatistician (10% effort:, 30.5% benefit rate)	$9,585		$9,872	
TBD, Research Assistant (20% effort; 30.5% benefit rate)	$10,310		$10,310	
Technical Personnel (by name and role)				
Samson Obembe, Database Analyst	$10,429		$7,161	
Total Salary and Benefits	$149,065		$150,652	
Equipment (itemize)				
Computer Hardware	$100			
External Monitor	$1,000			
Total Equipment	$1,100		0	
Supplies (itemize by category)				
SAS license	$185		$185	
Stata license	$395		$395	
Textbooks	$500		--	
Total Supplies	$1,080		$580	
Other Expenses (itemize by category)				
Publication fees	$1,500		$1,500	
Total Other	1,500		1,500	
Total MRTG Annual Meeting	$2,000		$2,000	
Total Expenses	**$154,745**	**$74,939**	**$154,732**	**$76,128**
Maximum Budget Allowed	**$155,000**		**$155,000**	

ACKNOWLEDGEMENTS